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10/030,111	06/03/2002	Tomasz Andrzej Nasilowski	NAS13001/JEK	6784

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BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314

EXAMINER

BARBER, THERESE

ART UNIT PAPER NUMBER

2882

DATE MAILED: 08/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/030,111

Applicant(s)

NASILOWSKI ET AL.

Examiner

Therese Barber

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
2. The specification is objected to because of the following informalities: The layout of the specification lacks the different section headings for a utility application (see 37 CFR 1.77(b)).

Claim Objections

3. Claims 1-25 are objected to because of the following informalities:

Regarding claims 1-25, the claims lacks the transitional phrases "comprising"; "consisting essentially of"; "consisting of"; "consisting essentially of"; "including"; "containing"; "characterized by"; "composed of"; "having"; or "being" to help define the scope of the claims and to help determine whether open or closed claim language is intended is missing from the claim language.
4. Regarding claim 1, lines 10-11, the limitation "whereby these means function as an alignment system for the radiation originating from the aforementioned sources" is objected. According to Chapter 2100 of the MPEP, Section 2183, "If the examiner finds that a prior art element performs the function specified in the claim, and is not excluded by any explicit definition provided in the specification for an equivalent, the examiner should infer from that finding that the prior art element is an equivalent, and should then conclude that the claimed limitation is anticipated by the prior art element. The burden then shifts to applicant to show that

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the element shown in the prior art is not an equivalent of the structure, material or acts disclosed in the application. In re Mulder, 716 F.2d 1542, 219 USPQ 189 (Fed. Cir. 1983). No further analysis of equivalents is required of the examiner until applicant disagrees with the examiner's conclusion, and provides reasons why the prior art element should not be considered an equivalent. See also, In re Fitzgerald , 619 F.2d 67, 205 USPQ 594 (CCPA 1980) (a case indicating that the burden of proof can be shifted to the applicant to show that the subject matter of the prior art does not possess the characteristic relied on whether the rejection is based on inherency under 35 U.S.C. 102 or obviousness under 35 U.S.C. 103).

5. Regarding claim 8, the limitation of the claim language are “the coupling-in optics (21, 22, 33) comprise connectorized components”, however, from page 12, lines 15-20 of the specification, the examiner cannot ascertain what is meant by the term “connectorized”. The examiner notes that reference number 28 refers to an optical connector.

6. Regarding claim 15, claim 15 recites the limitation "the bundle of waveguides is divided into separate parts which correspond to well-defined portions of the formed image" in claim 13. There is insufficient antecedent basis for this limitation in the claim. It is noted that the reference to the bundle of waveguides is present in claim 14 not claim 13.

7. Regarding claim 24, the claim limitation, “characterized in that one and the same image forming system, more particularly lens system ... and more particularly the light received again onto the waveguides” is unclear. The wording of the claim limitation is not clear to the examiner.

8. Regarding claim 24, line 4, insert the term “emitted” before the term “radiation”.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 2, 7, 10, 12-13, and 22-25 rejected under 35 U.S.C. 102(b) as being anticipated by Bailey (USPN 4,863,0411).

11. Regarding claims 1, 2, 7, 10, 12-13, and 22-25, Bailey discloses a sorting device (col. 1, lines 4-6) comprised of an inspection unit for sorting products based on their acceptability (col. 8, line 52 to col. 9, line 12; col. 2, line 39 to col. 3, line 11); a transport system (col. 8, lines 54-56) for moving the products (col. 3, lines 4-5); a rejection unit for rejecting unacceptable products (74; col. 9, lines 63-66); wherein the inspection unit (2) has at least two light sources for generating electromagnetic radiation that utilized waveguide technology for sorting products (col. 8, line 56 to col. 9, line 12; col. 9, lines 24-30); wherein the waveguide technology functions as an alignment system for the radiation originating from the light sources (col. 2, lines 53-64); coupling optics for coupling the light from the two light sources into the optical waveguides (V1-V4 and B1-B4; col. 8, line 68 to col. 9, line 5); a combining unit for combination the light from the optical waveguides (col. 4, lines 15-23); focusing optics for focusing the light beam (col. 8, line 68 to col. 9, line 6; col. 9, lines 15-20) onto the products to be sorted (col. 9, lines 25-28); characterized in that the light sources radiate light of a different wavelength (col. 3, lines 39-49); characterized in that the combining unit comprises dichroic

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elements (15; col. 9, lines 4-6); characterized in that the inspection unit is provided with means for making use of waveguide technology (col. 8, line 52 to col. 9, line 12; col. 2, line 39 to col. 3, line 11); characterized in that the image forming system, in particular, the lens system (19, 23, 24, 25) is used for focusing the emitted light onto the products and for focusing the emitted light onto the waveguides (col. 9, lines 8-20); characterized in that the sending/detection side of the inspection unit is made of two or more waveguide systems (col. 8, line 56 to col. 9, line 12; col. 9, lines 24-30; fig. 1).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey as applied to claims 1 and 2 above, and further in view of Shimizu (USPN 5,960,142).

Regarding claims 3-6, Bailey discloses a sorting device (col. 1, lines 4-6) comprised of an inspection unit for sorting products based on their acceptability (col. 8, line 52 to col. 9, line 12; col. 2, line 39 to col. 3, line 11); a transport system (col. 8, lines 54-56) for moving the products (col. 3, lines 4-5); a rejection unit for rejecting unacceptable products (74; col. 9, lines 63-66); wherein the inspection unit (2) has at least two light sources for generating electromagnetic radiation that utilized waveguide technology for sorting products (col. 8, line 56 to col. 9, line 12; col. 9, lines 24-30); wherein the waveguide technology functions as an alignment system for

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the radiation originating from the light sources (col. 2, lines 53-64); coupling optics for coupling the light from the two light sources into the optical waveguides (V1-V4 and B1-B4; col. 8, line 68 to col. 9, line 5); a combining unit for combination the light from the optical waveguides (col. 4, lines 15-23); and focusing optics for focusing the light beam (col. 8, line 68 to col. 9, line 6; col. 9, lines 15-20) onto the products to be sorted (col. 9, lines 25-28).

Bailey fails to disclose that the light sources are semiconductor laser sources that are cooled by a Peltier element.

Shimizu discloses a semiconductor laser module using the Peltier cooler (fig. 1), in order, to obtain a modulated optical signal (col. 1, lines 10-14). Shimizu discloses that the semiconductor laser is made of FeNiCo alloy (col. 3, lines 1-6). In addition, Shimizu states that the semiconductor laser module utilizes a Peltier cooler, in order, for the Peltier cooler to control the temperature of the semiconductor laser, thereby, ensuring stable operation of the semiconductor laser (col. 1, lines 14-21).

It would have been obvious to one having ordinary skill in the art at the time the invention was made that the light sources of the optical sorting device as disclosed by Bailey could be modified to incorporate a semiconductor laser module using a Peltier cooler as disclosed by Shimizu. Accordingly, the resultant structure will be able to produce modulated optical signals from the semiconductor laser module that includes a Peltier cooler, thereby, ensuring stable operation of the semiconductor laser.

14. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey as applied to claims 1 and 2 above, and further in view of Fussgäger (USPN 5,050,952).

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Regarding claim 11, Bailey discloses a sorting device (col. 1, lines 4-6) comprised of an inspection unit for sorting products based on their acceptability (col. 8, line 52 to col. 9, line 12; col. 2, line 39 to col. 3, line 11); a transport system (col. 8, lines 54-56) for moving the products (col. 3, lines 4-5); a rejection unit for rejecting unacceptable products (74; col. 9, lines 63-66); wherein the inspection unit (2) has at least two light sources for generating electromagnetic radiation that utilized waveguide technology for sorting products (col. 8, line 56 to col. 9, line 12; col. 9, lines 24-30); wherein the waveguide technology functions as an alignment system for the radiation originating from the light sources (col. 2, lines 53-64); coupling optics for coupling the light from the two light sources into the optical waveguides (V1-V4 and B1-B4; col. 8, line 68 to col. 9, line 5); a combining unit for combination the light from the optical waveguides (col. 4, lines 15-23); focusing optics for focusing the light beam (col. 8, line 68 to col. 9, line 6; col. 9, lines 15-20) onto the products to be sorted (col. 9, lines 25-28);

Bailey fails to disclose that the combining unit of the sorting device utilizes fused optical wavelength technology.

Fussgäger discloses a duplex optical communications system that utilized fused optical wavelength technology to transmitted two optical signals in opposite directions via the same waveguide (col. 3, lines 49-52). Fussgäger discloses that the optical couplers are fiber-fusion couplers in which the fibers are fabricated by fusion and are exactly similar fibers (col. 4, lines 47-51). Fussgäger discloses that the two fibers of the fiber-fusion coupler are tapered (col. 5, lines 46-56) in order, to operated with different wavelengths (col. 6, lines 52-60), thereby, producing an optical communications system that is simple and cost-effective while maintaining the required coupling efficiency (col. 2, lines 22-26).

It would have been obvious to one having ordinary skill in the art at the time the invention was made that the optical fibers of the optical sorting device as disclosed by Bailey could be modified to incorporate the fused optical couplers as disclosed by Fussgäger. Accordingly, the resultant structure will be able to transmit optical signals in the opposite directions via the same optical fiber while being cost-effective to produce.

15. Claims 8, 9, 14, 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey as applied to claims 1-2 and 12-13 respectively, and further in view of Reid et al. (USPN 3,786,266).

Regarding claims 8, 9, 14, 15 and 18, Bailey discloses a sorting device (col. 1, lines 4-6) comprised of an inspection unit for sorting products based on their acceptability (col. 8, line 52 to col. 9, line 12; col. 2, line 39 to col. 3, line 11); a transport system (col. 8, lines 54-56) for moving the products (col. 3, lines 4-5) to be sorted by the inspection unit (2; col. 8, line 56 to col. 9, line 12; col. 9, lines 24-30); a rejection unit for rejecting unacceptable products (74; col. 9, lines 63-66); wherein the inspection unit (2) has at least two light sources for generating electromagnetic radiation that utilized waveguide technology for sorting products (col. 8, line 56 to col. 9, line 12; col. 9, lines 24-30); and wherein a bundle of optical waveguides are utilized to receive the light reflected, transmitted, or emitted by the products (col. 8, lines 61-65 and col. 9, lines 8-12; fig. 1).

Bailey fails to disclose the utilization of coupling-in optics, to disclose the placement of the bundle of optical waveguides in the image plane of a lens system, to disclose that the bundle

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of optical waveguides can be divided into separate parts that correspond to well-defined portions of the formed image, or to disclose that the bundle is connected to the detector.

Reid discloses a coaxial arrangement of optical fibers (fig. 4) wherein the fiber-optic bundle forms two light paths and has both transmitting and receiving surfaces for forming images (col. 4, lines 54-61). Reid discloses that the illuminated surface of the fiber-optic bundle images light onto a body via a lens and the reflected light from the body will pass through a lens in order to detect by a detector (col. 4, line 63 to col. 5, line 2; fig. 4). It is inherent to ordinary of ordinary skill in the art that the lens is viewed as a coupling optics. Reid also discloses that the light-determining means can be connected to control means for separating the different bodies (col. 3, lines 6-8).

It would have been obvious to one having ordinary skill in the art at the time the invention was made that the sorting device of Bailey could be modified to include the image forming arrangement comprised of a fiber-optic bundle and a lens as disclosed by Reid. Accordingly, the resultant structure will utilized the fiber-optic bundle and lens, thereby, improving the efficiency of the sorting device to form images.

16. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey and Reid as applied to claim 15 above, and further in view of Jung et al. (USPN 5,962,262).

Regarding claims 16 and 17, Bailey in combination with Reid discloses a sorting device that utilized a bundle of optical waveguides and a lens system to form an imaging system.

Bailey and Reid fail to disclose that the bundle of optical waveguides is divided into concentric bundles and that the concentric bundles are separated from each other.

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Jung discloses an optical probe comprised of optical fibers, wherein the source and receiver optical fibers are concentric bundles that have different core diameters (col. 29, lines 59-67; fig. 20A) and are utilized to take measurements at desired or at a predetermined height and angle, thereby, minimizing the height and angular dependency problems (col. 3, lines 47-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made that the sorting device of Bailey in combination with the image forming arrangement of Reid could be modified to include the concentric formation of the fiber optic bundles as disclosed by Jung. Accordingly, the resultant structure will take images of the products at different heights and angles, thereby, improving the efficiency of the sorting device by minimizing height and angular dependency problems.

17. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey and Reid as applied to claim 15 above, and further in view of Buechler (USPN 3,788,741).

Regarding claims 19 and 20, Bailey in combination with Reid discloses a sorting device that utilized a bundle of optical waveguides and a lens system to form an imaging system.

Bailey and Reid fail to disclose that the utilization of splitting optics in the sorting device and its image forming system.

Buechler discloses an optical probe comprised of bundles of optical fibers, wherein the bundle has optical fibers that can be utilized as light receivers or light transmitting fibers (col. 3, lines 32-36) and wherein a splitting optics (30) is associated with the optical fibers that admit light to the detector (col. 5, lines 3-19; fig. 9). It is inherent in the art that beam/light splitting optics are utilized to reflect and transmit the same amount of light at a specific angle. Buechler

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discloses that the optical probe is spaced a reasonable distance from the surface of the object, increasing the usefulness of the probe (col. 2, lines 38-43).

It would have been obvious to one having ordinary skill in the art at the time the invention was made that the sorting device of Bailey in combination with the image forming arrangement of Reid could be modified to the splitting optics as disclosed by Buechler. Accordingly, the resultant structure will utilize the fiber-optic bundle, lens, and splitting optics to improve the efficiency of the sorting device to form images.

18. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey as applied to claim 12 above, and further in view of Jung et al. (USPN 5,962,262).

Regarding claim 21, Bailey discloses the limitations of the sorting device as stated above for claim 12.

Bailey fails to disclose that the optical waveguides are fibers that have a large core diameter/mantle diameter ratio and/or high numerical aperture.

Jung discloses an optical probe comprised of optical fibers, wherein the source and receiver optical fibers are concentric bundles that have different core diameters and numerical apertures (col. 29, lines 59-67; fig. 20A) and are utilized to take measurements at desired or at a predetermined height and angle, thereby, minimizing the height and angular dependency problems (col. 3, lines 47-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made that the sorting device of Bailey could be modified to include the formation of the fiber optic bundles with the different core diameters and numerical apertures as disclosed

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by Jung. Accordingly, the resultant structure will take images of the products at different heights and angles, thereby, improving the efficiency of the sorting device by minimizing height and angular dependency problems.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Therese Barber whose telephone number is (703) 306-0205. The examiner can normally be reached on Monday to Friday from 8:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (703) 308-4858. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-4857 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.


July 25, 2003



**DAVID V. BRUCE
PRIMARY EXAMINER**